APPENDIX A – FUEL SYSTEM OPERATION PLAN USER GUIDE

The Fuel System Operation Plan User Guide was developed by the Northern River Contaminated Land Project who has approved its use in this resource.



Council Regional Capacity Building Program



Underground Petroleum Storage Systems (UPSS) Fuel System Operation Plan Guide

January 2021



The Northern Rivers Contaminated Land Program produced this publication.

Acknowledgements:

This program has been funded by the New South Wales Government through the EPA's Contaminated Land Management Program.



The Underground Petroleum Storage Systems (UPSS) Fuel System Operation Plan Guide incorporates the NSW Environment Protection Authority (EPA) Fuel System Operation Plan Template. This template is available on the NSW EPA website: <u>www.epa.nsw.gov.au.</u>

We also thank the Hunter Joint Organisation for their assistance in the development of this resource. We have referred to information provided in the Hunter Joint Organisation, 2020. *Fuel System Operation Plan (FSOP) Guide* in the development of this guide.

Cover image: Installation of underground petroleum storage tanks. Photo: <u>www.nqpetro.com.au</u>

Disclaimer

The Northern Rivers Contamination Land Program has developed the *"Underground Petroleum Storage Systems (UPSS) Fuel System Operation Plan Guide"*. The content of this Guide is current at the time of publication.

This guide has been developed in good faith, exercising all due care and attention. While every effort has been made to ensure accuracy and completeness or suitability of the information in this publication, no responsibility is taken, nor guarantee given, by the Northern Rivers Contamination Land Program with respect to errors or omissions in the materials contained in the Guide. The Northern Rivers Contamination Land Program does not accept any responsibility or liability in regard to the use of any information given in this Guide.



This project has been funded by the New South Wales Government through the EPA's Contaminated Land Management Program



Table of Contents

UPSS Fuel S	System Operation Plan Guide	1
How to	o use this Guide	1
UPSS	Regulation Requirements	2
Fuel System	Operation Plan	3
Section A	Storage system information	5
Storag	e System Information for UPSS	5
Section B	Loss monitoring system	6
Section C	Incident management procedure	7
Section D	Maintenance schedule	8
6-Mont	thly Groundwater Monitoring	9
Section E	Current 'as-built' drawings for the system	10
Section F	Plan of the storage site	12
Section G	Industry standards	15
Section H	Specifications	17
Section I	Location of Records	18



This project has been funded by the New South Wales Government through the EPA's Contaminated Land Management Program



UPSS FUEL SYSTEM OPERATION PLAN GUIDE

This Fuel System Operation Plan (FSOP) Guide outlines the information with examples required by the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019 (the UPSS Regulation), prepared under the Protection of the Environment Operations Act 1997 (the Act).

In accordance with Part 4, Clause 18 of the UPSS Regulation, an underground petroleum storage system (UPSS) must not be used unless a Fuel System Operation Plan (FSOP) is in place for the site.

The UPSS Regulation requires the FSOP to contain the procedural documents and records specific to the UPSS. The FSOP must be accessible on site so that practical written procedures are on hand to monitor the UPSS in order to detect leaks and spills and take appropriate action if they are identified.

How to use this Guide

The Fuel System Operation Plan (FSOP) is a document describing how the underground fuel system at the site is configured, managed and maintained. While it is a legislative requirement to have a FSOP, a comprehensive FSOP will provide a useful resource for site operators and contractors for specific features of the site and system.

This Guide informs both the Person Responsible for the storage system and the Appropriate Regulatory Authority (ARA) of what represents "best practice" information that should be included in a site FSOP.

The Person Responsible for the UPSS should also ensure the plan is complete and implemented. It is recommended that duly qualified and experienced persons prepare certain procedural documents (such as the maintenance schedule, site drawings, and details of industry standards and specifications) to ensure that these documents are accurate and complete.

When this information needs updating, a Person Responsible can download a blank FSOP template from NSW EPA at <u>www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/clm/19p1789-storage-system-information-for-upss</u>. Forms are populated with site specific information, using this Guide to understand what information should be included in each section.



UPSS Regulation Requirements

Clause 18 of the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019 (UPSS Regulation) requires the development of a Fuel System Operation Plan (FSOP) for premises with an underground petroleum storage system. The appropriate regulatory authority may audit the FSOP.

The FSOP must be accessible on the storage site and must contain the documented procedures and records relating to the UPSS that are specified in Clause 18 of the UPSS Regulation 2019. Extracts from Clause 18 (and the sections of this folder where you can store your documents) have been summarised for easy reference.

Clause 18 (1)

a storage system must not [be used otherwise than in accordance with a Fuel System Operation Plan that] is in place in relation to the storage system .

Clause 18 (2)

"A storage system's Fuel System Operation Plan must include:

- A loss monitoring procedure (Section B)
- An incident management procedure (Section C)
- A maintenance schedule (Section D)
- The current 'built in' drawings for the system (Section E)
- A plan of the storage site... (Section F)
- A copy of each list of industry standards [that have been followed] ... (Section G)
- A copy of all specifications [used] ... (Section H)
- An inventory of employee induction and management training....." (Section D).

Clause 18 (3)

"...information to be included in the Fuel System Operation Plan..." (Section A)

Clause 18 (6)

"A storage system's Fuel System Operation Plan

- must comply with EPA guidelines, and
- must be updated as occasion requires, and
- must be kept on the storage site."

The Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019 can be accessed via <u>www.legislation.nsw.gov.au</u>.

The NSW EPA Underground Petroleum Storage Systems guideline can be accessed via <u>www.epa.nsw.gov.au/contaminated-land/20p2700-underground-petroleum-storage-systems-guidelines</u> or phone the Environment Line on 131 555.

MORE INFORMATION: Christine Pitman, Environmental Officer (Contaminated Land Program) *t* 02 6686 1214 *m* 0419 280 872 *e* <u>christine.pitman@ballina.nsw.gov.au</u>



FUEL SYSTEM OPERATION PLAN

Site Details		
Site name	e.g. Moo Moo Roadhouse	
Site street address		

Land Title Particulars		
Lot number		
DP number		

Person Responsible Details		
Person responsible*		
Person responsible Job Title		
Postal address**		
24-hour phone number***		

* If person responsible is a corporation, the name of a person who is authorised to act on behalf of the corporation

 $\ensuremath{^{**}\text{For}}$ person responsible or natural person, may differ from site address

***For person responsible or company contact person

Site Owner Details (if different from person responsible)		
Business Name		
Contact Name		
Contact phone number		

Access and security information

Details of access to, and security of, the systems, including any locks, gates, fences, etc. and the means of opening them.

Location of all records kept in accordance with Part 5 of the UPSS Regulation 2019, especially specifics of any offsite storage of records

Part 5, Clause 22: Record of significant modifications

Part 5, Clause 25: Incident log

Part 6, Clause 26: Documents to be kept for seven years from date of creation

Part 6, Clause 27: Documents to be kept for seven years from date of decommissioning

MORE INFORMATION: Christine Pitman, Environmental Officer (Contaminated Land Program) t 02 6686 1214 m 0419 280 872 e christine.pitman@ballina.nsw.gov.au

NORTHERN RIVERS Contaminated Land Program

Page 4

Revision No.	Details/Amendments	Date	Amended By
1			
2			

MORE INFORMATION: Christine Pitman, Environmental Officer (Contaminated Land Program)t 02 6686 1214m 0419 280 872e christine.pitman@ballina.nsw.gov.au

NORTHERN RIVERS Contaminated Land Program

SECTION A STORAGE SYSTEM INFORMATION

Storage System Information for UPSS

Provide the details for all underground storage tanks at the site in a format similar to Table 1. Complete one row per underground storage tank. Add rows as necessary.

Table 1 UPSS Storage System Information

Underground storage tank I.D.	Fuel Type	Maximum Capacity (Litres)	Tank composition	Date commissioned (give year/ decade only if exact date unknown)
E.g.: Tank 1	ULP 91	30,500	Steel	10 March 1985



SECTION B LOSS MONITORING SYSTEM

Loss monitoring procedures are designed to detect losses of petroleum from UPSS tanks or piping as early as possible to minimise the risk to human health and the environment.

The loss monitoring system must be designed by a duly qualified person and comply with section 4.5 of the *Australian Standard – the design, installation and operation of underground petroleum storage systems* (AS4897-2008) and clause 18 (4) of the Protection of the Environment Operations (Underground Petroleum Storage System) Regulation.

A loss monitoring system is a calculation or reconciliation based on three data inputs:

- 1. the amount of fuel delivered
- 2. the amount of fuel sold
- 3. the amount of fuel remaining in stock

The three common types of loss monitoring are automated tank gauging, manual dipping or statistical inventory reconciliation analysis (SIRA). An EPA factsheet, <u>Loss Monitoring</u> <u>Systems</u> is available as a quick and simple reference.

The FSOP must include details of the loss monitoring procedure used at the site. Basic information should include but not be limited to:

- details of the loss monitoring method (including method, frequency, calibration processes and evidence that staff have been trained in the monitoring method);
- the reconciliation calculation process (including inventory loss calculations) or, if applicable, the Site's third-party provider Statistical Inventory Reconciliation Analysis (SIRA) system report for the data that advises the Site of Pass, Inconclusive or Fail results. The SIRA system meets the standard requirements of AS4897–2008 based on 0.76 litres per hour tolerance as per US EPA Standards as adopted by the NSW EPA;
- the methodology in place to identify whether loss of product is due to leakage or other factors if the results exceed the trigger levels (such as line and tank integrity testing)
- the required response if on-going water or sand are observed in the fuel or fuel tanks (such as Equipment Integrity Testing (EIT).



SECTION C INCIDENT MANAGEMENT PROCEDURE

The incident management procedure must set out the steps to be taken to verify, stop and mitigate any impact from a UPSS leak or spill on human health and the environment.

Where a leak or spill at a UPSS is causing or is likely to cause material harm to the environment or human health, the person responsible must notify the appropriate regulatory authority of the incident immediately (Part 5.7 of the POEO Act).

The incident management procedure should outline:

- how the person responsible will determine whether an apparent loss of petroleum has been caused by a leak or spill, or has arisen from something else (such as incorrectly calibrated equipment or faulty accounting procedures)
- what steps need to be taken if there is a leak or spill.

The incident management procedure should consider the inclusion of the following information (taken from Section 4.5 of the UPSS Guidelines):

- who should notify the site supervisor that there has been a leak or spill, and who will notify the appropriate regulatory authority if necessary. Include all relevant authorities to contact in order i.e., Call 000 if the incident presents an immediate threat to human health or property; Council as the Appropriate Regulatory Authority (ARA) complete a Leak Notification Form (form is available from Council); The EPA Environment Line on 131 555; The Ministry of Health via the local Public Health Unit, see <u>https://www.health.nsw.gov.au/Infectious/Pages/phus.aspx#Lismore</u>; NSW SafeWork – phone 13 10 50
- how you will:
 - o prevent any more petroleum being released into the environment
 - identify and address any risks posed by the petroleum vapour fire, explosion or vapour inhalation
 - identify the source of any spill or leak
 - engage a maintenance contractor and/or UPSS integrity contractor to attend site to rectify the situation.
 - engage a duly qualified person to identify the nature and extent of any contamination and if necessary rectify / remediate the contamination
 - prevent any further release of petroleum into the environment
 - recover or remove the spilled/leaked petroleum
 - remove or (where practicable) repair leaking UPSS components, in accordance with industry best practice.

A spill or loss of fuel is a potentially dangerous situation that requires an immediate response. In addition to the above information, the Person Responsible should outline the emergency response procedure if there is an immediate threat to human health or property. Consideration must be given to the process undertaken both during and after an emergency event occurs.

> *MORE INFORMATION:* Christine Pitman, Environmental Officer (Contaminated Land Program) *t* 02 6686 1214 *m* 0419 280 872 *e* <u>christine.pitman@ballina.nsw.gov.au</u>





SECTION D MAINTENANCE SCHEDULE

System maintenance procedures and a maintenance schedule must be documented in the fuel system operation plan. The maintenance schedule is to be in accordance with the required relevant industry standards. This includes a detailed procedure on the groundwater monitoring plan in place at the site.

A UPSS must not be used unless all gauges, indicators, probes, sensors and any other measuring instruments in the system are checked and maintained (and where necessary calibrated) in accordance with the manufacturer's specifications and/or recommendations.

All Certification, Compliance Documentation and routine maintenance records are to be retained at a nominated office and accessible upon request.

NOTE: The Person Responsible must ensure the accuracy and completeness of their UPSS Maintenance Schedule. Table 2 provides examples of typical items that require maintenance for guidance purposes only. Table 2 does not constitute a site-specific UPSS Maintenance Schedule and should not be relied upon as such. The Person Responsible must identify the equipment on their site in order to develop a site-specific UPSS Maintenance Schedule and manage their identified equipment.

Table 2	Example UPSS Maintenance Schedule (FOR GUIDANCE PURPOSES
ONLY)	

Item	Schedule	Responsibility	Contractor
Cleaning and degreasing of dispensers	Weekly		
Fuel pump hoses, fittings and pumps	6 Monthly		
Fuel pump/dispenser calibrations	12 monthly		
Fuel pump/dispenser certifications	2 Yearly		
Leak detectors on pressure systems	12 Monthly		
Water tests all fuel grades	Weekly		
Water tests ethanol grades	Daily		
Dip stick inspection (end damage)	Weekly		
Grated drains and pits - pumping	3 Monthly		
Oil/water separators and interceptor pits	6 Monthly		
Inventory reconciliation	Daily		
Tank & line integrity tests	SIR event		

MORE INFORMATION: Christine Pitman, Environmental Officer (Contaminated Land Program) *t* 02 6686 1214 *m* 0419 280 872 *e* <u>christine.pitman@ballina.nsw.gov.au</u>



Item	Schedule	Responsibility	Contractor
Groundwater and tank pit monitoring wells	6 monthly		
Employee training records e.g. induction and procedure training	As completed		

6-Monthly Groundwater Monitoring

The UPSS Regulation requires that groundwater monitoring events be undertaken at least every six months. This can be done manually or by using an interface probe or photo-ionisation detector (PID).

A duly qualified person is required to provide training and a detailed written instruction on how to check the wells for contamination and recording of the results. This instruction is to be kept in the fuel system operation plan. Attach an 'As-built' plan or map showing the installed groundwater monitoring wells

For best practice, every six months, each well on site is sampled by a duly qualified person and analysed in a laboratory accredited by NATA (the National Association of Testing Authorities). The groundwater monitoring test results must contain the minimum information outlined in Section 2.3 of the UPSS Guidelines.

Details of where the monitoring records are stored and how to access them should be included in the FSOP.



SECTION E CURRENT 'AS-BUILT' DRAWINGS FOR THE SYSTEM

These are detailed site plans (to a recognisable scale) which depict the final installed configuration of any part of a UPSS and any construction deviations showing all features of the storage site as currently built. This does not include the pre-constructed drawings.

If the site owner is unable to locate 'As-built' drawings, they must develop a site plan that provides a 'best approximation' of the site.

The date of the plan should be included.

Figure 1 provides an example of the items to be included in the detailed "As-Built" site plans.



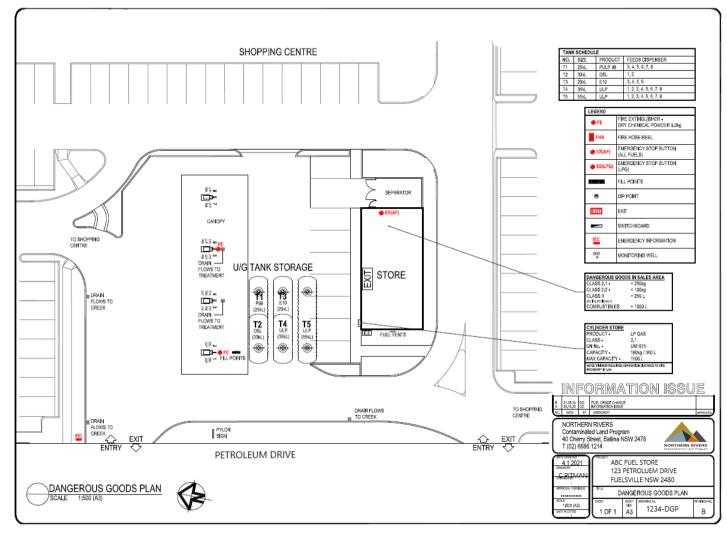


Figure 1 UPSS Current 'As-Built' drawings for the system

MORE INFORMATION: Christine Pitman, Environmental Officer (Contaminated Land Program) t 02 6686 1214 m 0419 280 872 e christine.pitman@ballina.nsw.gov.au



SECTION F PLAN OF THE STORAGE SITE

As outlined in Clause 18(2)(e) of the UPSS Regulations, the UPSS plan should show the locations of:

- the storage system
- all buildings and associated infrastructure
- all fences and gates
- all groundwater monitoring wells (including any codes by which they are designated)
- any unsealed ground surfaces
- all drainage and services.

Attach the most detailed and recent 'Storage Site' drawings available. If these drawings are not available, a site plan must be developed which provides the 'best approximation' of the site.

Figures 1 and 2 provide examples of the information included in storage site plans.



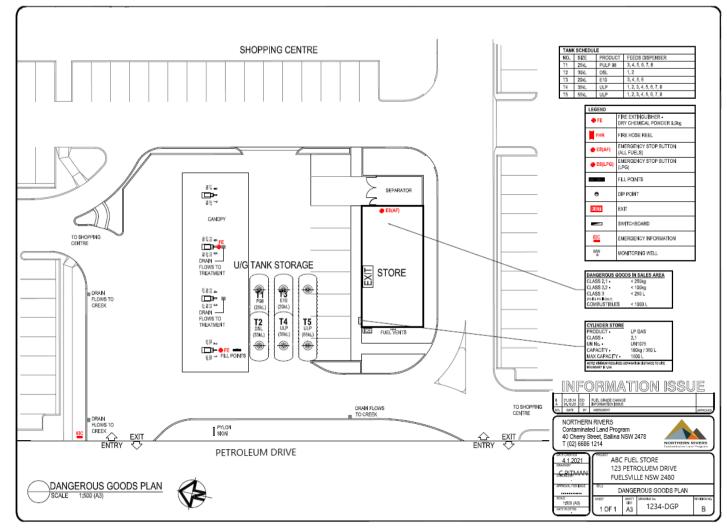


Figure 1 UPSS Current 'As-Built' drawings for the system

MORE INFORMATION: Christine Pitman, Environmental Officer (Contaminated Land Program)

t 02 6686 1214 m 0419 280 872 e christine.pitman@ballina.nsw.gov.au

This project has been funded by the New South Wales Government through the EPA's Contaminated Land Management Program





Figure 2 UPSS Site Layout Plan – Groundwater monitoring wells

MORE INFORMATION: Christine Pitman, Environmental Officer (Contaminated Land Program)

t 02 6686 1214 m 0419 280 872 e christine.pitman@ballina.nsw.gov.au

This project has been funded by the New South Wales Government through the EPA's Contaminated Land Management Program



SECTION G INDUSTRY STANDARDS

A copy of each list of industry standards that have been followed in connection with each of the following:

- The design of the system
- The installation of the system
- The design of any modification
- The implementation of any modification

OR

In the absence of a list of industry standards, documented evidence that the person responsible for the system has taken all reasonable steps to obtain such a list (clause 18(5) of the UPSS Regulation 2019).

The following list of Industry Standards (current as of January 2021) is provided as a guide and was current at the time of writing. The list must be reviewed prior to any site modification to ensure it is up to date.

DESCRIPTION	STANDARD
The Design Installation and Operation of Underground Petroleum Storage Systems	AS 4897 – 2008
Pipelines – Gas and Liquid Petroleum – General Requirements	AS 2885.0 - 2008
Pipelines – Gas and Liquid Petroleum – Design and Construction	AS 2885.1 - 2012
Pipelines – Gas and Liquid Petroleum – Operation and Maintenance	AS 2885.2 - 2016
The Control of Undesirable Static Electricity	AS /NZS 1020 - 1995
The Storage and Handling of Flammable Combustible Liquids	AS 1940 - 2017
Steel Tanks for Flammable and Combustible Liquids	AS 1692 - 2006
The Removal and Disposal of Underground Petroleum Storage Tanks	AS 4976 - 2008
Petroleum Products – Pipeline, Road, Tanker Compartment and Underground Tank Identification	AS 4977 - 2008
Classification of Hazardous Areas	AS 2430
Installation of Groundwater Monitoring Wells and Groundwater Monitoring	<i>Minimum Construction Requirements for Water Bores in Australia</i> , 3 rd Edition, February 2012.
	Guidelines for the assessment and management of groundwater contamination, NSW DEC, 2007.
	Underground Petroleum Storage Systems: Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019, NSW EPA 2020.
	Australian Water Quality Guidelines for Fresh and Marine Waters, ANZECC 2000.
Tank Decommissioning and Validation	Underground Petroleum Storage Systems: Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019, NSW EPA 2020.
	UPSS Technical Note: Decommissioning, Abandonment and Removal of UPSS, NSW DECCW 2010.
	UPSS Technical Note: Site Validation Reporting, NSW DECCW 2010.
	Contaminated Land Guidelines: Consultants Reporting on Contaminated Land, NSW EPA, 2020.

MORE INFORMATION: Christine Pitman, Environmental Officer (Contaminated Land Program) *t* 02 6686 1214 *m* 0419 280 872 *e* <u>christine.pitman@ballina.nsw.gov.au</u>



SECTION H SPECIFICATIONS

A copy of all specifications used and referred to, including:

- The design specifications for the system
- The installation specifications for the system
- The design specifications for any modification, and
- The implementation specifications for any modification.

OR

In the absence of a copy of specifications, documented evidence that the person responsible for the system has taken all reasonable steps to obtain such copies (clause 18(5) of the UPSS Regulation 2019).



SECTION I LOCATION OF RECORDS

Part 5 and Part 6 of the UPSS Regulations require specific records to be kept. The following summary is provided to ensure this information is being retained and recorded in accordance with the UPSS Regulations.

The FSOP must specify the location of records required to be kept in accordance with Part 5 and Part 6 of the UPSS Regulation, especially if records are stored off-site.

Part 5, Clause 22: Record of significant modifications

Specific information associated with any significant modification made to the storage system must be recorded. This includes the following:

- A comprehensive description of the modification
- The dates of commencement and completion of the modification
- The results of the equipment integrity test carried out
- Current "as-built" drawings for the system, revised to reflect the modification

Part 5, Clause 25: Incident log

Information required under this clause must be kept on the storage site, or if another location is specified in the systems FSOP then in that location. This includes the following:

- The carrying out of an activity, by a person acting otherwise than at the direction or request of a person responsible for the system, that has affected, is affecting or could affect the integrity of the system
- The occurrence of any unplanned or abnormal incident (including operational disruptions or equipment failures) that has affected, is affecting or could affect the long-term safety of the system.

Part 6, Clause 26: Documents to be kept for seven years from date of creation This includes the following:

- The results of any equipment integrity tests
- Data produced by any measuring equipment (this includes leak detection and loss monitoring systems)
- Details of any action undertaken as part of loss detection procedures
- Any documents prepared as part of system decommissioning
- Any notifications made as part of pollution incident reporting
- Anything required for the purposes of clause 25 of the UPSS Regulation 2019

Part 6, Clause 27: Documents to be kept for seven years from date of decommissioning

This includes the following:

- Each certificate issued for the system regarding Equipment Integrity Testing
- A leak detection system report
- Each version of the Fuel System Operation Plan
- A record made in relation to significant modifications
- A report made in relation to the decommissioning or tank removal and/or replacement



- The incident report kept for the system
- Any report that has been in relation to a pollution incident
- Anything required to be documented under Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019 immediately before its repeal.

Part 6, Clause 28: Delivery of records on change of responsibility

Clause 28 requires that within 30 days of a change in Person Responsible, all documents for the system required to be kept in Part 6, and that are in the person's possession, are delivered to the person newly responsible for the system.